

SCIENCE & EDUCATION Impact

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It Only Seems Simple

Food safety is a farm-to-fork job.

Most foodborne illness is preventable, yet it affects millions and costs billions every year. Land-Grant University researchers and educators are working on innovative ways to make the food supply safer and to increase consumers' awareness of their part in the farm-to-fork cycle of food safety.

Payoff

- **Egg-stra protection.** About 4.5 million eggs are infected with *Salmonella* each year and these eggs are responsible for at least 80 percent of the cases of salmonellosis. **Arkansas** research addressed the problem with soy, whey, cellulose and wheat gluten coatings that minimize egg microbial contamination. As an added benefit the coatings strengthen shells, which should reduce egg breakage, that costs U.S. producers \$37 million annually. **Maine, New Hampshire and Vermont** teamed up on an egg quality assurance program in 1989 to reduce the foodborne illness risk in laying flocks. It provides producers with pest control support, monitors cleaning and disinfecting procedures, tests breeding stocks and incorporates an intensive vaccination program using vaccines that enhance the birds' resistance to *Salmonella* infection. There has been 100 percent participation in this program among the three states' producers. As a result no egg-associated outbreaks of salmonellosis have been traced to any of the egg farms in these states. **Texas A&M** researchers discovered that eggs treated with a 60-second dose of ultraviolet light have up to 1,000 times fewer microorganisms than their untreated counterparts. In **Connecticut** an ongoing volunteer program of testing for the presence of *Salmonella enteritidis* (SE) in laying hens has contributed to more than 250 SE-free flocks in the state. Connecticut researchers, also are developing SE-specific probes that will cut *Salmonella* detection time from many days to a few hours.
- **Bacteria know no borders.** It's estimated that one in four Americans will get sick this year from foodborne illness and 5,000 will die. Food safety educators at **Ohio State** believe they may have unlocked the secret to reducing those numbers: Target the most common illness-bearing pathogens and sharpen food safety messages to focus on ways consumers can best fight them. The univer-

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sity is developing a graduate level distance education course with **Colorado State** and **Washington State** that will debut in 2003. This will help those entering the field identify the most effective information when they begin working with clients.

Delaware, Georgia, Colorado State, Purdue, West Virginia, Kansas State, Montana, New Hampshire, North Carolina State, Utah State and **Wyoming** are among Land-Grant Universities that provide ServSafe food handlers' training to food service workers in their respective states. This reduces foodborne illness and helps the economy in other ways. The National Restaurant Association estimates that a single outbreak of foodborne illness will cost a restaurant at least \$75,000.

- **Killing food bugs at the source.** **South Dakota State** researchers are using natural antioxidants such as rosemary and sage in conjunction with irradiation to slow the breakdown of fat. Scientists were able to effectively reduce rancidity while controlling foodborne illness and food loss due to microbial spoilage. Previously, irradiation caused meat to develop an off-flavor and off-odor. A researcher at **North Carolina A&T** discovered that treating raw ground beef with a commercially produced natural spice, along with other natural ingredients, can inhibit the growth of *E. coli* O157:H7.
- **Simply soap.** After a food safety and hand-washing education exhibit at the Western Washington Fair, **Washington State** educators noted a significant change in behavior. During the state fair, the seventh largest in the nation, attendance remained the same but hand soap usage doubled from 300 to 600 gallons compared to the previous year when they had no exhibit. In **American Samoa**, a month after distribution of hand-washing education posters and the broadcast of a food safety video, liquid antibacterial soap began showing up in the island's public restrooms. Normally soap is rarely seen in public restrooms in American Samoa.

- **HACCP with that?** Hazard Analysis and Critical Control Points (HACCP) is the foundation of food safety in nearly every state. **Kansas State, Nebraska, Missouri** and **South Dakota State**, offered subsidized, hands-on training programs in HACCP procedures in their four-state region. Participant surveys found that 74 percent changed cooling procedures, 54 percent are monitoring cooler and freezer temperatures, 21 percent modified their recipes to include HACCP principles, 78 percent have implemented improved hand-washing procedures, about 57 percent are implementing HACCP principles and about 50 percent used the materials to train other employees. **Florida A&M** trained 150 food service personnel and 150 producers in food safety, health management and quality assurance contributing to the prevention and control of foodborne diseases. In Oklahoma, **Langston** Extension HACCP workshops held in four communities resulted in a 33 percent increase in knowledge of HACCP and related subjects. **Maryland, Georgia, Kansas State** and **Wisconsin** are just a few of the Land-Grant Universities delivering affordable HACCP training to small meat slaughter and food processing plants. These local and family-owned businesses often are least able to afford consultants to help them write their plans and get required training.



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